

(12) UK Patent Application (19) GB (11) 2 342 816 (13) A

(43) Date of A Publication 19.04.2000

(21) Application No 9822243.3

(22) Date of Filing 13.10.1998

(71) Applicant(s)

Nokia Mobile Phones Limited
(Incorporated in Finland)
Keilalahdentie 4, 02150 Espoo, Finland

(72) Inventor(s)

Hans H H Hansen
Lars Bohn Hansen
Paivi Hekkanen

(74) Agent and/or Address for Service

Nokia IPR Department
Nokia House, Summit Avenue, Southwood,
FARNBOROUGH, Hampshire, GU14 0NG,
United Kingdom

(51) INT CL⁷
H04Q 7/22

(52) UK CL (Edition R)
H4L LDGX L1H10

(56) Documents Cited
GB 2326000 A

(58) Field of Search
UK CL (Edition Q) G4A AAP , H4L LDGX LDSK , H4P
PDCSA
INT CL⁶ G01F 1/00 , H04Q 7/22
ONLINE: WPI, EPODOC, PAJ

(54) Abstract Title

Accessing a server computer connected to a wireless communication network

(57) In order to access a server computer via a radio telecommunications network, a client (such as a mobile terminal) first sends a request to the server for the initialising settings (including passwords) that must be input into the client to enable it to access the server. The request comprises a client ID and the server has means for recognising the client ID. On recognition of the client ID, the server establishes a radio connexion with the client and forwards the settings as a short message (SMS).

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

GB 2 342 816 A

FIG. 1

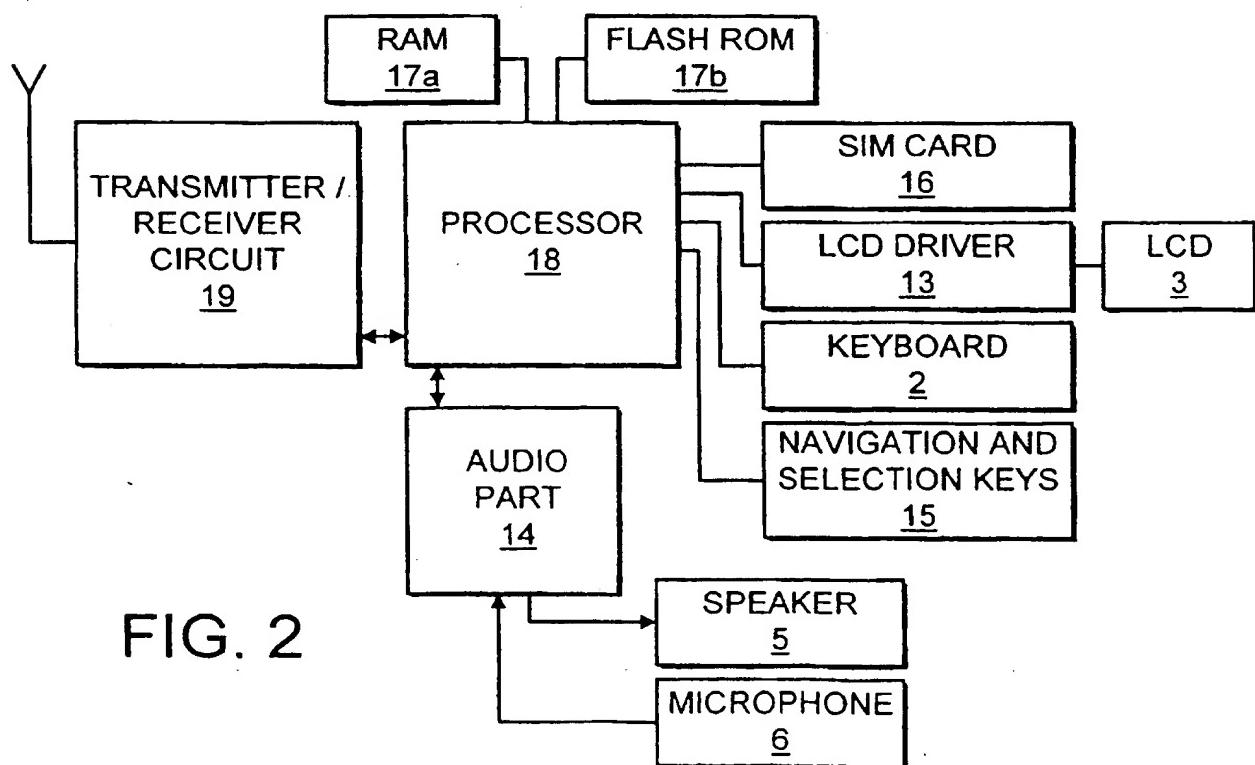
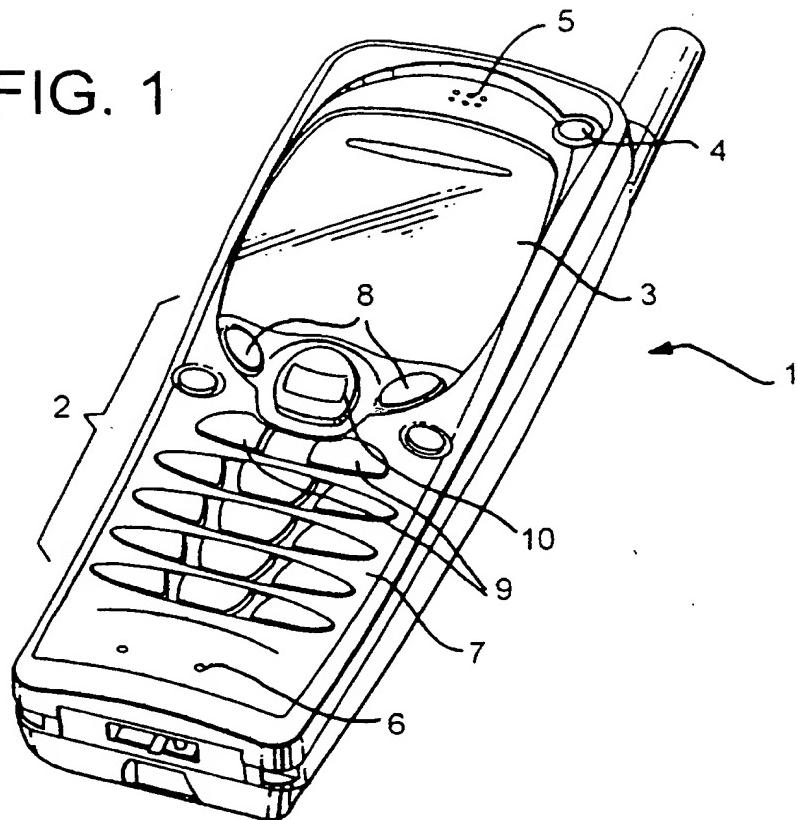


FIG. 2

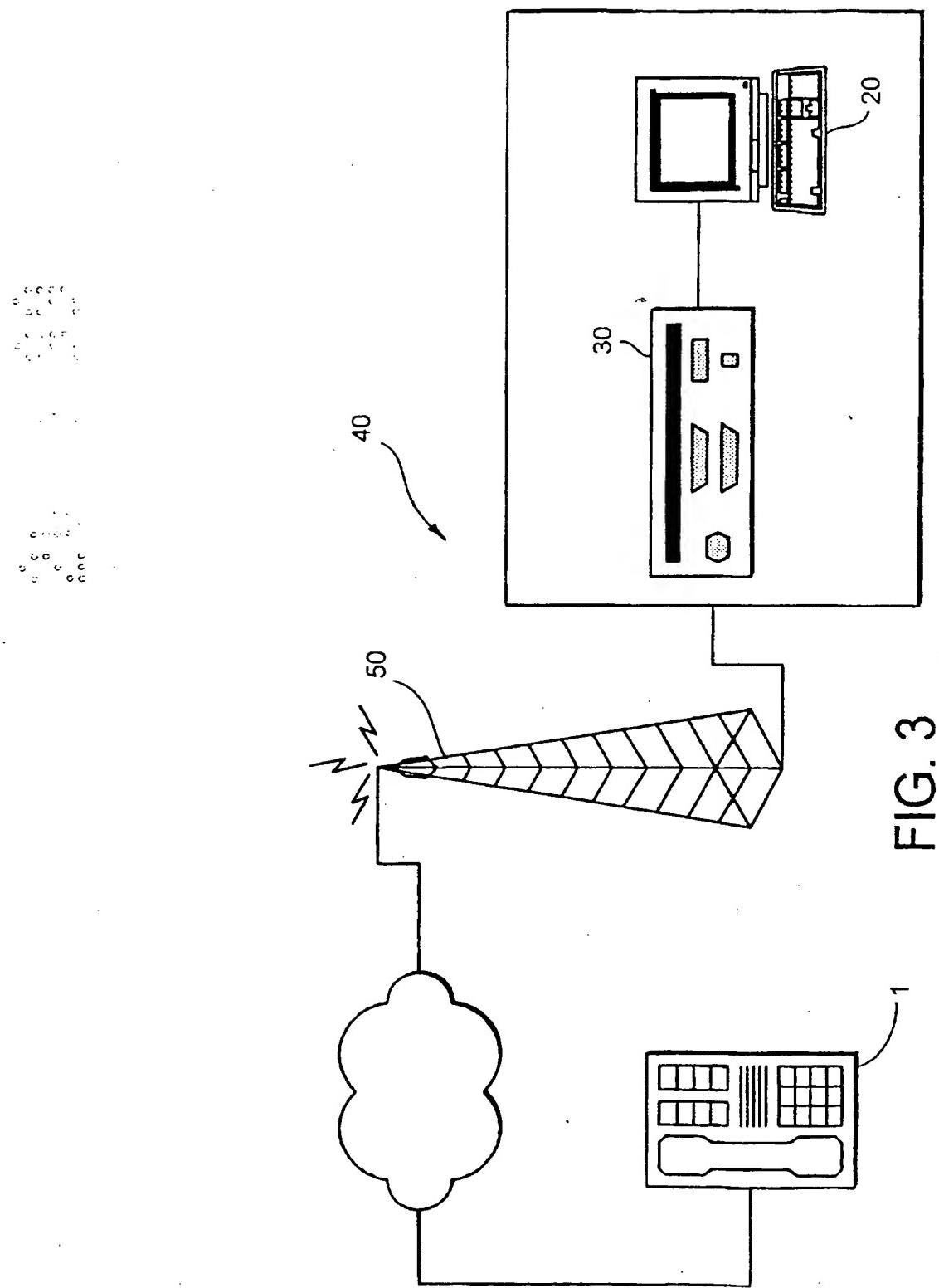


FIG. 3

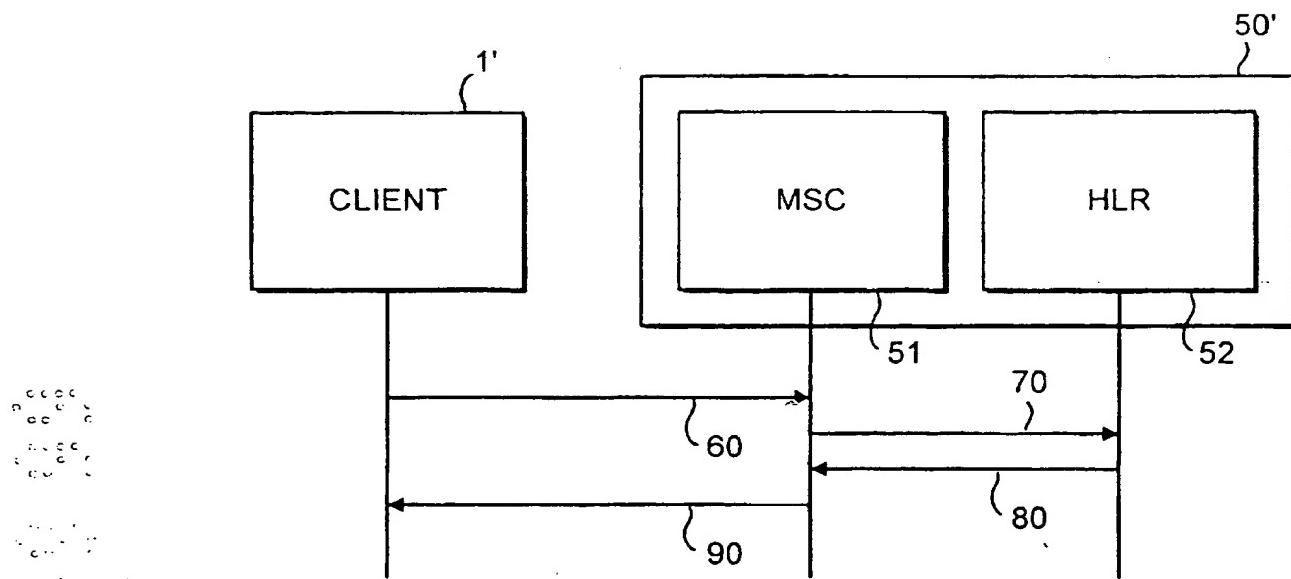


FIG. 4

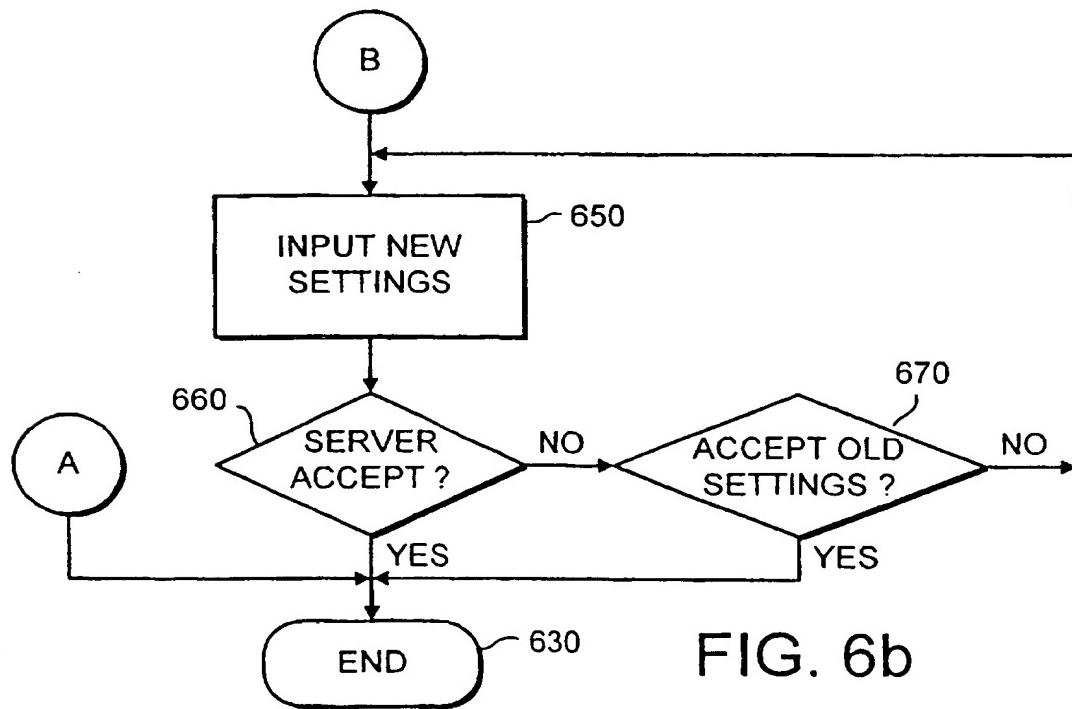


FIG. 6b

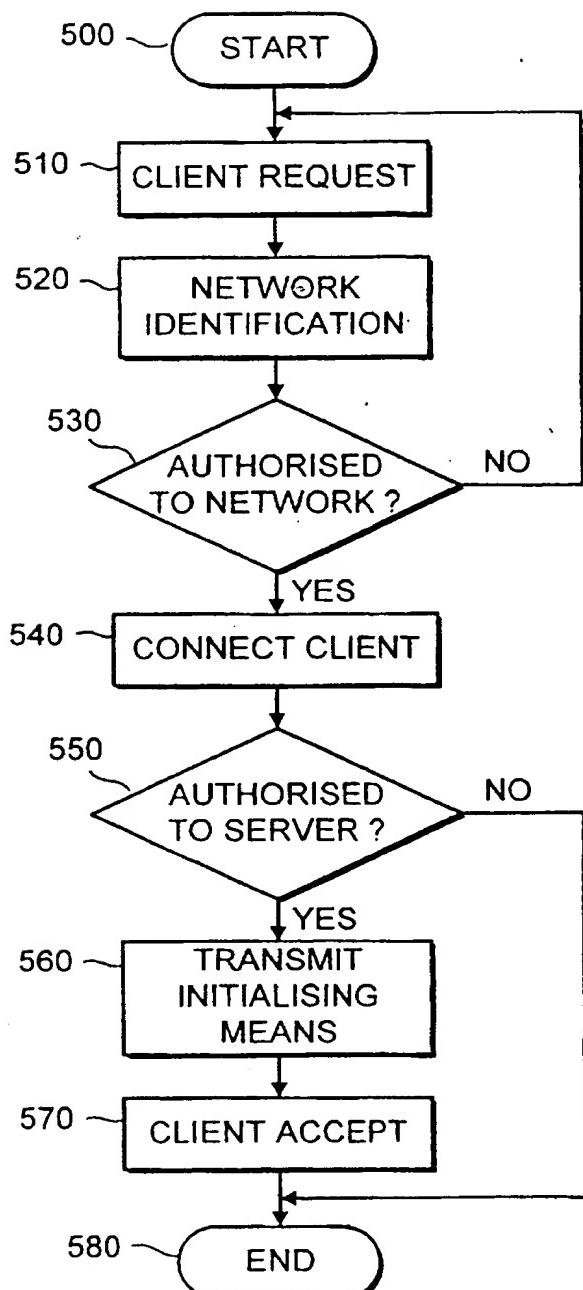


FIG. 5

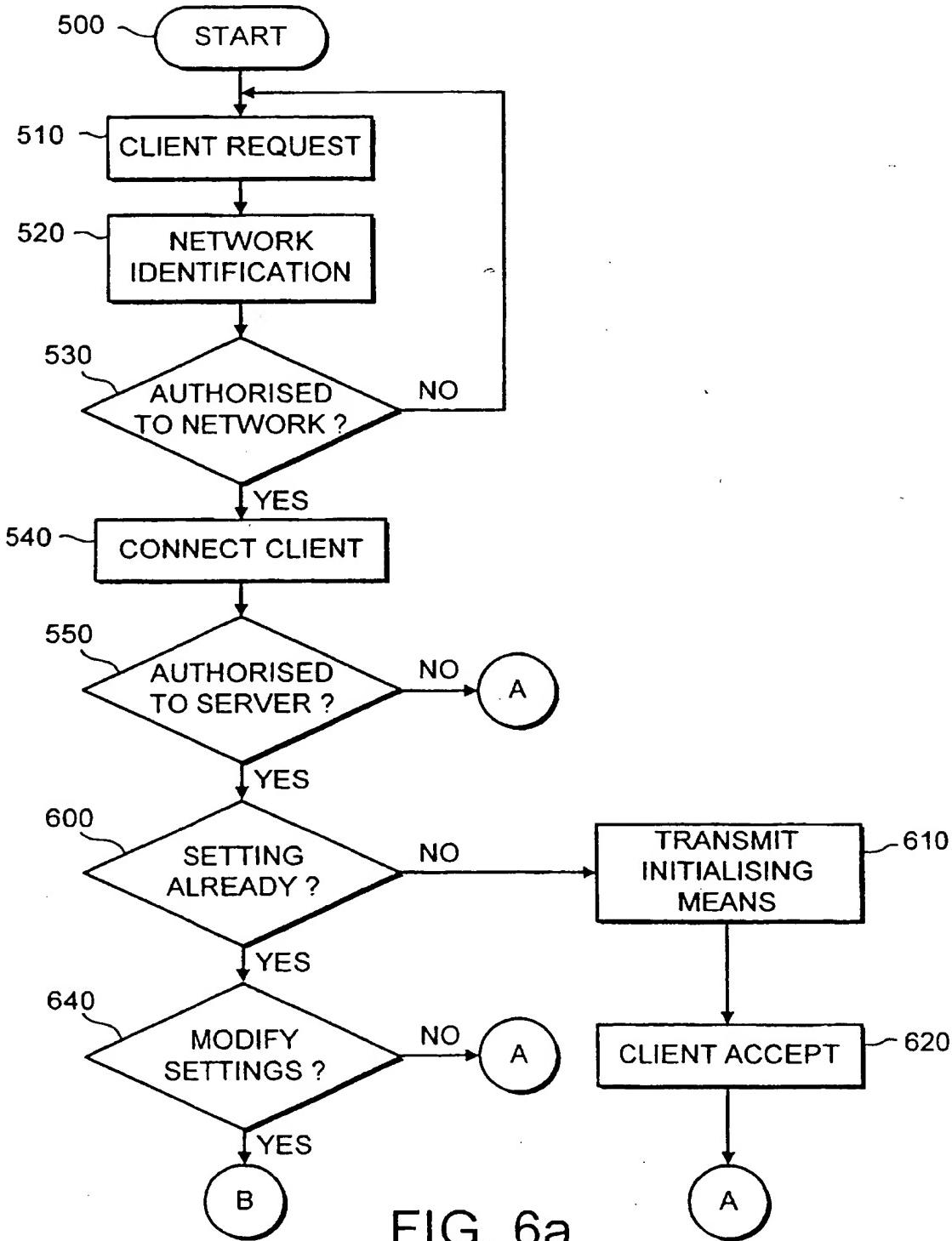
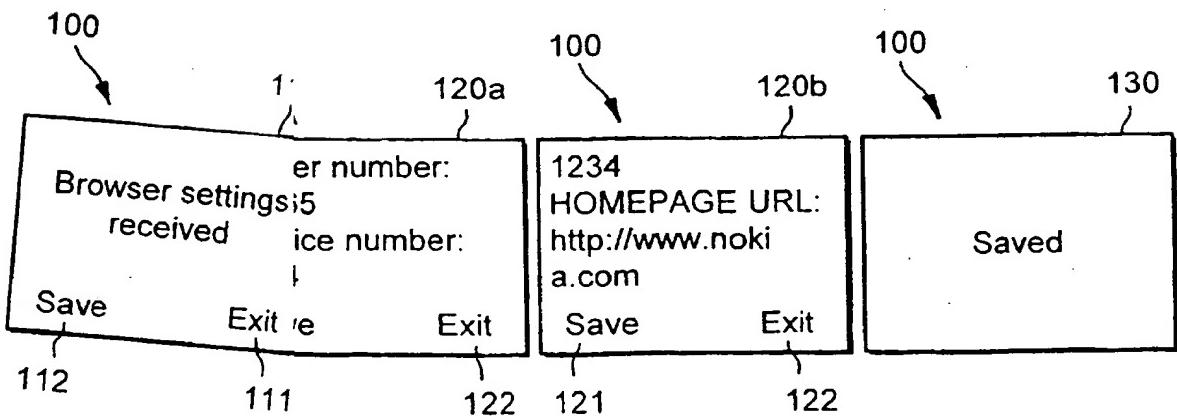
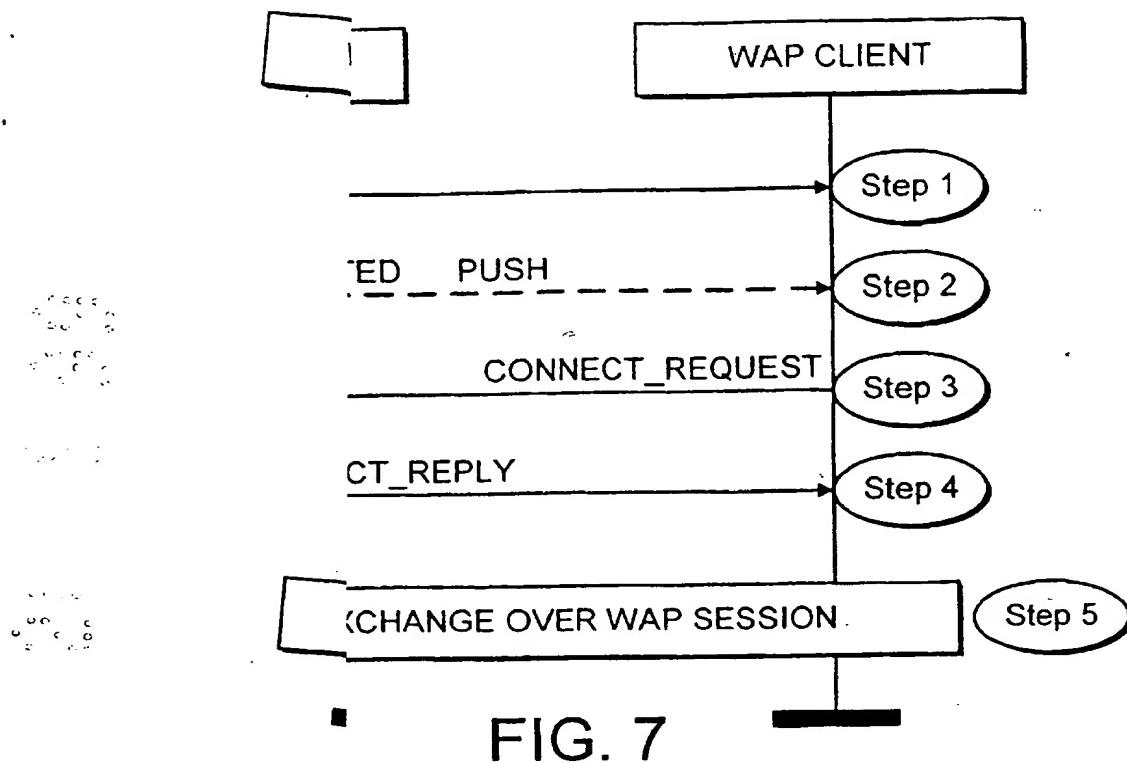


FIG. 6a

**FIG. 8**

Accessing a server computer.

The present invention relates to a method of inputting settings to a client for
5 accessing a server computer connected to a wireless telecommunication
network, a system for inputting setting(s), a server computer, and a client
according to the preamble of claim 1, 9, 10, and 15, respectively.

- Today, there are several ways of communicating by using a wireless
10 communication terminal, e.g. by using a cellular phone. For example, it is
possible to use a cellular phone to make voice calls, send short messages
(SMS), access the Internet, etc. One example of such a terminal which is able
to access the Internet is the Nokia 9000i Communicator™.
- 15 When using the Nokia 9000i Communicator™, in order to access e.g. the
Internet, there are some setting(s) which should be fulfilled, before it will be
possible to access the Internet. These setting(s) may for example be a
provider name, a phone number, a user name and/or a password. Naturally,
there may be more or even less setting(s) than those as mentioned, and
20 some of the setting(s) are not always necessary to fulfil. The settings which
should be fulfilled are mostly decided by an Internet provider, i.e. a provider of
a server computer connected to the Internet. One reason for having these
settings, is to have some kind of security level when a user is going to access
the sever computer, in order to avoid unauthorised users. Also, the settings
25 makes it more flexible for the user to access the server computer from other
systems, than the Nokia 9000i Communicator™, like a personal computer
having a software program for handling the connection between the user and
the computer server.

The Nokia 9000i Communicator™ is very easy to use, when giving an input to the required settings, and the present invention provides a further development of inputting settings.

- 5 When the user gives the input manually, there might be a risk that some of the settings might be invalid. For example, when typing a password, the code may usually appear as asterisks, i.e. the user does not see what is being written on the screen. Therefore, in some cases there might be an uncertainty of whether the password is right or wrong. Also, there might be other 10 occasions when a setting might be invalid, e.g. if the user gets confused and inputs an invalid setting without being aware of this.

Furthermore, due to the growing market of wireless communication, which presently reaches new customers and services all the time, there is a need to handle accounts to server computers in a more efficient way. For example, 15 the Wireless Application Protocol (WAP) defines an industry-wide specification for developing applications that operate over wireless telecommunication networks. To enable operators and manufacturers to meet the challenges in advanced services, differentiation and fast/flexible service creation a set of protocols has been designed in transport, security, 20 transaction, session and application layers. This means that it may be possible for a user to initiate a session to access e.g. the Internet, by using a WAP platform. The initialising of the session can be done in a similar way as the Nokia 9000i Communicator™ provides, i.e. the user may input the 25 settings.

US-A-5,751,798 disclose a passive information access system for use in a service subscription system having a service provider and a subscriber unit. The subscriber is typically a user of a cellular phone, who subscribes on a 30 service provided by the service provider (e.g. an operator of a cellular

- telecommunications network). The passive information system includes a database for storing subscriber information specific to a subscriber and a receiver for detecting initialising signals from a subscriber unit when the subscriber unit is active. The subscriber information is based on usage
- 5 information, e.g. number of minutes used since last billing period. The passive information access system also includes a host computer for identifying the activated subscriber unit from the detected initialising signals, accessing from the database subscriber information specific to the identified subscriber unit, and presenting a portion of the accessed subscriber information to the
- 10 identified subscriber unit.

US-A-5,577,103 propose a method of providing a subscriber in a cellular telephone network with information from a subscriber service profile. This document shows a further example of how it is possible to provide a

15 subscriber with information based on a particular subscriber profile.

The main object of the present invention is to eliminate the risk of inputting incorrect setting(s), before accessing a server computer from a client, which requires an input of setting(s). The client can be a wireless communication

20 terminal, e.g. a Nokia 9000i Communicator™, a WAP terminal, or a similar terminal which have a possibility to access a server computer.

This object is achieved in accordance with the present invention by claim 1, 9, 10, and 15, respectively.

25 One particular advantage of the invention is that the settings are provided in initialising means on a server computer. This means that the user does not have to know anything about the settings, i.e. the user does not need any papers, or other material, which gives information about the settings. Thus,

30 the invention facilitates the input of the setting(s) to a client, before accessing

a server computer. Also, it will make it harder for an unauthorised user to access a user's account to a server computer, because there is no physical information about the account.

- 5 Further advantages of the present invention will be apparent from the dependent claims.

The invention will be described in greater detail in the following by way of example only and with reference to the attached drawings, in which

10 Fig. 1 schematically illustrates a preferred embodiment of a hand portable phone/client according to the present invention,

15 Fig. 2 schematically shows the essential parts of a telephone for communicating with a cellular or cordless network,

Fig. 3 schematically shows a system for accessing a server computer according to the present invention,

20 Fig. 4 schematically shows how a client establishes a connection to a wireless telecommunication network,

Fig. 5 shows a flowchart of the input of settings to a client, for accessing a server computer, in accordance with the present invention,

25 Fig. 6 shows a further embodiment of the flowchart in Fig.5, in accordance with the present invention,

Fig. 7 illustrates the message structure for inputting settings to a client/phone
30 for accessing a server computer according to the present invention, and

Fig. 8 shows an example of a user interface in a phone/client according to the present invention.

5

- Fig. 1 shows a preferred embodiment of a client, hereafter also referred as a phone, according to the present invention. The phone, which is generally designated by 1, comprises a user interface having a keypad 2, a display 3, an on/off button 4, a speaker 5, and a microphone 6. The phone 1 according to the preferred embodiment is adapted for communication via a wireless telecommunication network, e.g. a cellular network. However, the phone could also have been designed for a cordless network. The keypad 2 has a first group 7 of keys as alphanumeric keys, by means of which the user can enter a telephone number, write a text message (SMS), write a name (associated with the phone number), etc. Each of the twelve alphanumeric keys 7 is provided with a figure "0-9" or a sign "#" or "*", respectively. In alpha mode each key is associated with a number of letters and special signs used in text editing.
- 10 The keypad 2 additionally comprises two soft keys 8, two call handling keys 9, and a navigation key 10.

- 20 The two soft keys 8 have a functionality corresponding to what is known from the phones Nokia 2110™, Nokia 8110™ and Nokia 3810™. The functionality of the soft key depends on the state of the phone and the navigation in the menu by using a navigation key. The present functionality of the soft keys 8 is shown in separate fields in the display 3 just above the keys 8.

The two call handling keys 9 according to the preferred embodiment are used for establishing a call or a conference call, terminating a call or rejecting an incoming call.

- 5 The navigation key 10 is an up/down key and is placed centrally on the front surface of the phone between the display 3 and the group of alphanumeric keys 7. Hereby the user will be able to control this key by simply pressing the up/down key using his/her thumb. Since many experienced phone users are used to one-hand control, it is a very good solution to place an input key,
- 10 requiring precise motor movements. Thus, the user may place the phone in the hand between the finger tips and the palm of the hand. Hereby, the thumb is free for inputting information.

Fig. 2 schematically shows the most essential parts of a preferred embodiment of the phone. These parts being essential to understand the invention. The preferred embodiment of the phone of the invention is adapted for use in connection with a GSM network, but, of course, the invention may also be applied in connection with other phone networks, such as other kinds of cellular networks and various forms of cordless phone systems or in dual band phones accessing sets of these systems/networks. The microphone 6 records the user's speech, and the analogue signals formed thereby are A/D converted in an A/D converter (not shown) before the speech is encoded in an audio part 14. The encoded speech signal is transferred to controller means 18, which may support software in the phone. The controller means 18 also forms the interface to the peripheral units of the apparatus, including a RAM memory 17a and a Flash ROM memory 17b, a SIM card 16, the display 3 and the keypad 2 (as well as data, power supply, etc.). The controller means 18 communicates with the transmitter/receiver circuit 19. The audio part 14 speech-decodes the signal, which is transferred from the controller means 18 to the earpiece 5 via a D/A converter (not shown).

The controller means 18 is connected to the user interface. Thus, it is the controller means 18 which monitors the activity in the phone and controls the display 3 in response thereto.

5

Therefore, it is the controller means 18 which detects the occurrence of a state change event and changes the state of the phone and thus the display text. A state change event may be caused by the user when he activates the keypad including the navigation key 10, and these type of events are called 10 entry events or user events. However, the network communicating with the phone may also cause a state change event. This type of event and other events beyond the user's control are called non user events. Non user events comprise status change during call set-up, change in battery voltage, change in antenna conditions, message on reception of SMS, etc.

15

Network.

Fig. 3 schematically shows a system 40, comprising a network 50, a server computer 20 and a client 1. This example will show how a session, i.e. a connection, between a server computer 20 and a client 1, e.g. a wireless 20 communication apparatus like a cellular phone, is established. The server 20 and the client 1 may support a Wireless Application Protocol (WAP). The WAP content and its applications are specified in a set of well-known content formats based on the familiar WWW content formats. WAP is disclosed in the Wireless Application Protocol Architecture Specification; Version 30-Apr-1998; 25 by Wireless Application Protocol Architecture Working Group; (see also <http://www.wapforum.org/docs/technical.htm/arch-30-apr-98.pdf> on the Internet).

30

When transporting content between the client 1 and the server 20, the content is transported using a set of standard communication protocols based on the

WWW communication protocols. A browser in the client 1 co-ordinates the user interface and is analogous to a standard web browser. The client 1 is provided in an environment, which makes it possible to reach a wide variety of different wireless platforms, e.g. world wide web (WWW). The environment

- 5 provided may be referred to as Wireless Application Environment (WAE). This means that the client 1 may be supported by some kind of browser, e.g. a micro-browser, to access the different services connected to the server. In order to access these services the browser may comprise following functionalities:
 - 10 · Wireless Markup Language (WML) – a lightweight markup language, similar to HTML, but optimised for use in hand-held mobile terminals;
 - WML Script – a lightweight scripting language, similar to JavaScript™;
 - Wireless Telephony Application (WTA, WTAI) – telephony services and programming interfaces; and
 - 15 · Content Formats – a set of well-defined data formats, including images, phone book records and calendar information.

- 20 The server 20 supporting the Wireless Application Protocol, may be connected to a gateway 30. The gateway 30 is also a kind of server, which may identify and encrypt/decrypt information between the client 1 and the server computer 20. This means that the gateway can be provided with encoders and decoders (not shown). Also, the server 20 may comprise different algorithms to make the encryption/decryption. The encryption/decryption itself may be performed by well-known methods, e.g. RSA, Diffie-Hellman, etc. The server computer 20 may comprise different scripts to support WAP and data to be accessed by the client. This data may comprise all kinds of information, e.g. weather reports, news, information from stock markets, etc.
- 25

In order to access the server computer 20, from the client 1, the server 20 is connected to a wireless telecommunication network 50, e.g. a cellular phone network. The network 50 comprises memory means (not shown), which is arranged to identify the identification means from the client. The memory

- 5 means can be e.g. a database, comprising information about different subscribers of the network. Thus, when a client tries to establish a connection to the network, the network controls if the client is stored in the memory means.
- 10 The connection between the client and the network is shown as an example in Fig. 4. The network 50' in Fig.4 can be provided with a Mobile Switching Centre (MSC) 51 and a Home Location Centre (HLR) 52, which are well known in the art. The HLR 52 may comprise a database (not shown) having information about different clients having access to the network 50'.
- 15 Upon activating the client, it is common to press in a code, e.g. by entering a PIN code, which can be connected to a SIM card. When the client 1', in Fig.4, is activated, i.e. the phone is turned on, the client 1' sends a request 60 to the MSC 51, which serves the client's operating area. The request 60 comprises identification means (not shown), identifying said client. The MSC 51 sends a message 70 to the associated HLR 52 to ascertain the status of the subscriber associated with the client. The HLR 52 notifies 80 the MSC 51 whether or not the subscriber (client) is an authorised user, and if authorised, the MSC 51 sends a response 90 to said request 60 and establishing a connection between the client 1' and the network 50'.
- 20
- 25

The input of settings

- 30 Fig. 5 shows a flow chart, in accordance with the present invention, describing the input of settings to a client before the first time the client is establishing a connection to a server. In order to activate the client, it must be turned on. It is

common to press in a code, when the client is going to be activated, e.g. by entering a PIN code, which can be connected to a SIM card. Upon activating the client "START" 500, the client sends a request to the network "CLIENT REQUEST" 510. This request 510 can be handled by e.g. the controller 18, as disclosed in Fig. 2. The request comprising identification means (not shown), which identifies the client. The identification means can be information stored on the client's SIM card. This type of information is well known in the art, and will not be disclosed in any further detail. Then the network performs a similar identification of the client "NETWORK IDENTIFICATION" 520, as shown in Fig. 5. If the client is authorised to the network "AUTHORISED TO NETWORK?" 530, i.e. if the network recognises the identification means, a connection is established between the client and the network "CONNECT CLIENT" 540. Else, the client has to send another request in order to establish a connection to the network. The recognition can be done by comparing the identification means with a database, to control if the identification means is included in the database. How the actual comparison is done is well known in the art, and will not be disclosed any further.

When the client is connected to the network, the computer server controls whether the client is authorised to the server or not "AUTHORISED TO SERVER?" 550. This control can for example be done by forwarding the request from the client to the network. The server receives the identification means from the network or reads the identification means from the network. If the client does not have access to the server, i.e. the client is not authorised, the client may use the network as usual and make calls, but without having the possibility to access the server. How this is handled is decided by the provider of the network, so it may also be possible to refuse or grant the client to access the network. If the server recognises the identification means, received in the request to the network, the server sends initialising means to the client "TRANSMIT INITIALISING MEANS" 560. These initialising means

- comprises information about the settings the client must have to access the server computer. The transfer (sending) of the initialising can be done automatically, e.g. by allowing the server to automatically detect the identification means sent to the network, when the client has sent the request
- 5 to the network, and sends the initialising means to the client upon reception. The transfer may also be done by sending a download request to the server, for downloading the initialising means. Upon receipt of the downloading request in the server, the server sends the initialising means back to the client, as a response to the downloading request.
- 10 When the client receives the initialising means, the client might input these settings either by accepting them automatically or manually "CLIENT ACCEPT" 570, e.g. by sending a response back to the server to confirm the accept. How the client inputs the settings is decided by the controller means
- 15 18, as mentioned earlier with reference to Fig. 2. After this stage a session has been established between the client and the server "END" 580, which means that data can be exchanged over a WAP session.
- 20 As a preferred embodiment, the format of the initialising means can be sent as a short message (SMS), and/or by using a push command. Thus, it may be possible to either send the initialising means as an SMS message by using the push command, or by sending another message by means of the push message. The push command is a feature used in the Wireless Application Protocol (WAP).
- 25 The example shown in Fig.6 is disclosing further features, according to the present invention. In Fig. 6a, the steps from "START" 500 to "AUTHORISED TO SERVER?" 550 is corresponding to the steps shown in Fig.5. Starting from the step "AUTHORISED TO SERVER?" 550, having a client who does
- 30 not have access to the server, i.e. the client is not authorised, the session to

- the server computer will be ended, as described with reference to Fig. 5. Else, the computer server may ask the client if any initialising means has been received yet "SETTINGS ALREADY?" 600. If no initialising means has been received, the server computer sends initialising means to the client
- 5 "TRANSMIT INITIALISING MEANS" 610. These initialising means comprises information about the settings the client must have to access the server computer. As disclosed with reference to Fig.5, the transfer (sending) of the initialising can be done automatically, and/or by sending a download request to the server, for downloading the initialising means. Upon receipt of the
- 10 downloading request in the server, the server sends the initialising means back to the client, as a response to the downloading request. When the client receives the initialising means, the client might input these settings either by accepting them automatically or manually "CLIENT ACCEPT" 620, e.g. by sending a response back to the server to confirm the accept. How the client
- 15 inputs the settings is decided by the controller means 18, as mentioned earlier with reference to Fig. 2. After the point marked with an "A", a session has been established between the client and the server "END" 630, which means that data can be exchanged over a WAP session. The "A" and "B" in Fig. 6a refers to "A" and "B" in Fig. 6b.
- 20 If the server has already sent initialising means to the client, the server may ask the client if any changes in the settings should be made "MODIFY SETTINGS?" 640. If the client does not want any changes, "A", a session can be established "END" 630. Else, the client may input new settings, "B",
- 25 "INPUT NEW SETTINGS" 650, and if the server accepts the new settings "SERVER ACCEPT?" 660, a session can be established, "END" 630. If the server does not accept the new settings, e.g. because the new settings are not valid, the server may ask the client if he/she wishes to accept the old settings "ACCEPT OLD SETTINGS?" 670. If the client accepts the old

settings a session can be established, "END" 630. Else, the client may try to make another input, i.e. go back to the step "INPUT NEW SETTINGS" 650.

Fig. 7 shows an example of a preferred embodiment, in accordance with the 5 present invention, of how it will be possible to use a push command to input settings to a client. In general, the method makes use of the push command in order to push the initialising means, i.e. the initial settings, to a client from a server computer. The client and the server in this example are able to handle WAP, and are hereafter also referred as WAP client and WAP server, 10 respectively. Thus, the WAP client described with reference to Fig.6 can be e.g. a "WAP phone". The phone in this example may be provided with a smart card, preferably with a SIM card (Subscriber Identity Module).

- Step1, When a client subscription is made, a push command, comprising 15 the setting(s) for the client, is set to be pending on the WAP server. The initial settings may e.g. comprise the address of the WAP server the client should use.

The setting can be inputted automatically, which can be based on 20 information about e.g. phone (client) type and capabilities.

When the phone is turned on for the first time and the SIM card is activated, the push command can be sent from the WAP server to the phone. The push command is now sent through a WAP stack in the 25 phone, and inputted to a user agent (e.g. a browser). The user agent may at this point either use the information to automatically input the initial settings, i.e. set up the phone or prompt the user a question if he/she wants to initiate the phones WAP capabilities (e.g. use the browser), if the answer is yes the phone is set up. The user agent can e.g. be provided in 30 the controller, as described in Fig. 2.

At this point, receipt of the push command is not confirmed, and therefore the WAP server may not yet know if the push is received by the phone.

- 5 • **Step 2,** If the WAP server has sent the push command and the phone does not respond with a Connect_request (see step 3) the push command is sent once more to the phone, "Repeated push". The server may send the initialising means repeatedly, over a fixed number of times, e.g. for 10 times or more, or until the client has sent a response back to the server confirming receipt of the initialising means. Naturally, the sending can be less than 10 times, because this is only a parameter which can be set in the WAP server. Instead of using a push command, it may also be possible to send the initialising means by using a short message (SMS).
- 10
- 15 The advantage of having a fixed interval is that if a new subscriber activates the SIM card for the first time, in a phone which does not support WAP, the server does not have to perform an endless loop. Thus, this will save some unnecessary commands to be sent over the air.
- 20 • **Step 3,** When the phone has received the setting and the set up (the input) of the phone has come to an end, the phones WAP user agent may send a request to a session layer for establishing a session. How this session is set up is defined in "WAP Wireless Session Protocol Specification Draft Version 30-Apr-1998". Figure 3, page 20 (see also <http://www.wapforum.org/docs/technical.htm/wsp-30-apr-98.pdf>). In other words, the client sends a Connect_request to the WAP server with an address defined in the push command, which is recognised by the WAP server.
- 25
- 30 Thus, the WAP server receives a confirmation from the client, confirming

that the push command is received and accepted by the phone. This also means that the "Repeated push" in Step 2 can be disabled.

- 5 • **Step 4,** When the WAP server receives the Connect_request it responds with a Connect_reply as described in "WAP Wireless Session Protocol Specification Draft Version 30-Apr-1998", Figure 3, page 20 (see also <http://www.wapforum.org/docs/technical.htm/wsp-30-apr-98.pdf>).

10 Finally, a session is now established, which means that the WAP phone and the WAP server may now communicate over the session.

15 When the session is established the phone may have the possibility to "fuse" or disable to receive another push command comprising settings. By doing so, it will increase the security for the user, i.e. it will reduce the risk of having a security hole, where e.g. hackers can send new phone settings to the WAP phone (e.g. with request to connect to non friendly WAP servers).

- 20 • **Step 5,** The future communication between the phone and the WAP server can now take place over the established session, i.e. it will be possible to exchange data over a WAP session.

25 A major advantage of step 5 is that the user does not have to wait for the time it takes for a session to be established when he/she uses the user agent (browser) for the first time.

30 Fig. 8 illustrates an example, in accordance with the present invention, of a user interface arranged in a client. The client is arranged to access a server computer, via a wireless telecommunication network, as shown in Fig. 3. The user interface can be provided with display means 100, e.g. an LCD display,

which is disclosed in more detail with reference to Figs. 1 and 2. One of the functions in the user interface is to receive an input of initialising means, giving the client access to the server computer.

- 5 When the client sends a request, comprising identification means (not shown) identifying the client, to the network, the network performs an identification of the client, as shown in Fig. 5. If the network recognises the identification means, a connection is established between the client and the network. When the client is connected to the network, the computer server controls whether
- 10 the client is authorised to the server or not. If the server recognises the identification means, received in the request to the network, the server sends initialising means to the client. These initialising means comprises information about the settings, which should be inputted in the client in order to access the server computer. When the client receives the initialising means, the client
- 15 can be informed about the receipt by indicating the reception on the display means 100, e.g. by showing a message 110 saying "Browser settings received". This message 110 may generate an option for the client, to "exit" 111 or "show" 112 the received settings. If the client chooses to exit this message 110, it may be possible for the client to view the settings at a later
- 20 occasion.

If the client has chosen to "show" 112 the received browser settings, a new message 120a,b can be generated. The message 120a informs the client what the received settings are, e.g. "Server number" and "Service number".

- 25 Also, there might be other information comprised in this message 120b, indicating e.g. at what location the client will start a session ("Homepage URL": http://www.nokia.com), i.e. the address of a particular homepage which will be requested by the client when accessing the server. At this point, the client may choose to "Save" 121 or to "Exit" 122, this message 120. If the client
- 30 choose to "Exit" 122, no settings will be inputted, i.e. saved. If the client

choose to "Save" 121 these settings, the settings will be saved in the client, which can be indicated by a message 130 saying e.g. "Saved".

The example given in Fig. 8 shows how it can be possible for the user/client to
5 affect the settings. Naturally, it is possible for the user interface to automatically accept the settings, without requesting an accept from the user, and input the settings, before the first time the client is going to establish a connection to the server computer. As mentioned with reference to Fig. 2, the automatic acceptance is handled by the controller 18.

10

The invention is not limited to the above described and in the drawings shown examples of an embodiment but can be varied within the scope of the appended claims. For example, it is possible for a client to have access to the network, even if the client is not authorised to a server computer connected to
15 the network.

Acronyms.

| | | |
|----|-----------|--|
| | APDU | Application Protocol Data Unit |
| | API | Application Programming Interface |
| | CA | Certification Authority |
| 5 | CBC | Cipher Block Chaining |
| | DF | Dedicated File |
| | DH | Diffie-Hellman |
| | EC | Elliptic Curve |
| | ECC | Elliptic Curve Cryptography |
| 10 | ECDH | Elliptic Curve Diffie-Hellman |
| | ECDSA | Elliptic Curve Digital Signature Algorithm |
| | EF | Elementary File |
| | GSM | Global System for Mobile Communication |
| | IV | Initialization Vector |
| 15 | MAC | Message Authentication Code |
| | ME | Management Entity |
| | OSI | Open System Interconnection |
| | PDU | Protocol Data Unit |
| | PRF | Pseudo-Random Function |
| 20 | SAP | Service Access Point |
| | SDU | Service Data Unit |
| | SHA-1 | Secure Hash Algorithm |
| | SIM | Subscriber Identity Module |
| | SMS | Short Message Service |
| 25 | SSL | Secure Sockets Layer |
| | TLS | Transport Layer Security |
| | WAP | Wireless Application Protocol |
| | WML | Wireless Markup Language |
| | WMLScript | Wireless Markup LanguageScript |
| 30 | WDP | Wireless Datagram Protocol |

| | |
|------|-----------------------------------|
| WSP | Wireless Session Protocol |
| WTLS | Wireless Transport Layer Security |
| WTP | Wireless Transaction Protocol |

- 5 The list above includes the acronyms used in the present text. Detailed discussion and explanation of the acronyms may be found in the technical specifications defining the Wireless Application Protocol on the Internet homepage for WAPFORUM, <http://www.wapforum.org/>.

C L A I M S

1. A method of inputting setting(s) to a client (1,1') for accessing a server computer (20), said server computer (20) is connected to a telecommunication network (50,50',51,52), said server (20) comprising initialising means giving the client (1,1') access to said server (20), said initialising means comprising information about the setting(s) to be inputted to the client (1,1'), wherein the method comprises the following steps:
 - 10 • sending a request (60,510) from said client to said network (50,50',51,52) to establish a connection between the client (1,1') and the network (50,50',51,52), said request (60,510) comprises identification means identifying said client (1,1'), and
 - said network (50,50',51,52), upon recognition of said identification means, 15 sends a response (90) to said request and establishes a connection (540) between the client (1,1') and the network (50,50',51,52),
characterised in that said server (20), upon identification of the client, sends (560) the initialising means, comprising the information about the setting(s), to the client (1,1'), before the first time the client establishes a connection to the 20 server (20), in order to give an input of the setting(s) to the client (1,1') which gives access to the server (20).
2. Method according to claim 1, *characterised in* that the client (1,1') sends a response (570) to the server (20) upon receipt of said initialising means, to 25 confirm the receipt of the initialising means.
3. Method according to claim 1 or 2, *characterised in* that the server (20) sends the initialising means repeatedly, over a fixed number of times, or until the client (1,1') has sent a response back to the server (20)
30 confirming the receipt of the initialising means.

4. Method according to claim 1, 2 or 3, characterised in that the server (20) automatically detects said identification means sent to the network (50,50',51,52), when the client (1,1') has sent the request (60) to the network, and sends the initialising means to the client upon detection.

5

5. Method according to claim 1, 2 or 3, characterised in that the client (1,1') sends a downloading request to the server (20) for downloading the initialising means, and upon receipt of said downloading request, the server (20) sends the initialising means back to the client (1,1') as a response to said downloading request.

10

6. Method according to claim 1, 2, 3, 4 or 5, characterised in that the initialising means is sent as a short message (SMS).

15

7. Method according to any one of the preceding claims, characterised in that said client (1,1') and said server (20) is using a Wireless Application Protocol (WAP), and the initialising means is sent to the client (1,1') by using a push command.

20

8. Method according to any one of the preceding claims, characterised in that the client (1,1') is provided with controller means (18), which automatically asks the client (1,1') for an input of the initialising means, before the first time the client (1,1') establishes a connection to the server (20).

25

9. System (40) for inputting setting(s), said system (40) comprises:

- a client (1,1'), arranged to receive an input of setting(s),
- a server computer (20), having initialising means giving the client (1,1') access to said server (20), said initialising means comprising information about the setting(s) to be inputted in the client (1,1'), and

- a cellular telecommunication network (50,50',51,52) connected to said server (20), and arranged to establish a wireless connection between the client (1,1') and the telecommunication network (50,50',51,52) upon receiving a request (60,510) from said client (1,1'), said request (60,510) comprising identification means identifying said client (1,1'), said network (50,50',51,52) comprising memory means which is arranged to identify the identification means from the client

5 *characterised in*

that said server (20) is arranged to send the initialising means, comprising the
10 information about the setting(s), to the client (1,1'), upon recognition of said identification means received in the request (60,510) to the network (50,50',51,52), before the first time the client (1,1') is establishing a connection to the server (20), in order to give an input of the setting(s) to the client (1,1') which gives access to the server (20).

15

10. A system (40) according to claim 9, characterised in that the server (20) and the client (1,1') is provided with a Wireless Application Protocol (WAP).

20 11. A system (40) according to claim 10, characterised in that the server (20) is further arranged to send the initialising means to the client (1,1') by using a push command, and/or a short message (SMS).

12. A server computer (20) provided with initialising means giving a client (1,1') access to said server (20), said server (20) is arranged for
25 connection to a cellular telecommunication network (50,50',51,52), said network (50,50',51,52) is arranged to establish a connection between the client (1,1') and the telecommunication network (50,50',51,52) upon receiving a request (60) from said client (1,1'), said request (60) comprising identification means identifying said client (1,1'), said network
30 comprising memory means which is arranged to identify the identification means from the client (1,1').

(50,50',51,52) comprising memory means which is arranged to identify the identification means in the request (60),

characterised in

that said server (20) is further arranged to send the initialising means to the

- 5 client (1,1'), upon recognition of said identification means received in the request (60) in the network (50,50',51,52), before the first time the client (1,1') establishes a connection to the server (20), in order to give the client (1,1') an access to the server (20).

- 10 13. A server (20) according to claim 12, characterised in that the server (20) and the client (1,1') is provided with a Wireless Application Protocol (WAP).

- 15 14. A server (20) according to claim 13, characterised in that the server (20) is further arranged to send the initialising means to the client (1,1') by using a push command.

- 20 15. A client (1,1') arranged to access a server computer (20), via a wireless telecommunication network (50,50',51,52), said client (1,1') comprising controller means (18) arranged to receive an input of initialising means giving the client (1,1') access to said server (20),

characterised in

that the controller means (18) is further arranged to automatically ask for the input of the initialising means from the server computer (20), before the first time the client (1,1') attempts to establish a connection to said server (20).

- 25 16. A client (1,1') according to claim 15, characterised in that the client (1,1') and the server (20) is provided with a Wireless Application Protocol (WAP).

17. A client (1,1') according to claim 16, characterised in that the client (1,1') is further arranged to receive the initialising means from the server (20) through a push command.

5 18. Wireless communication terminal being a client (1,1') according to claim
15.

10 19. A wireless communication terminal according to claim 18, characterised in
that said terminal is a cellular phone (1).



Application No: GB 9822243.3
Claims searched: all

Examiner: Nigel Hall
Date of search: 12 February 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.Q): G4A (AAP); H4L (LDGX, LDSK); H4P (PDCSA)

Int CI (Ed.6): G06F 1/00; H04Q 7/22

Other: Online: WPI, EPODOC, PAJ

Documents considered to be relevant:

| Category | Identity of document and relevant passage | Relevant to claims |
|----------|---|--------------------|
| A,E | GB 2326000 A (IBM) | |

- | | | | |
|---|---|---|--|
| X | Document indicating lack of novelty or inventive step | A | Document indicating technological background and/or state of the art. |
| Y | Document indicating lack of inventive step if combined with one or more other documents of same category. | P | Document published on or after the declared priority date but before the filing date of this invention. |
| & | Member of the same patent family | E | Patent document published on or after, but with priority date earlier than, the filing date of this application. |